

Patent claims

1. A process for producing a sterilization system, in particular for sterilizing drinking water and industrial water, characterized in that the noble metal surface of a base material comprising noble metal is first oxidized in an acidic solution and then treated in an aqueous salt solution.
2. The process as claimed in claim 1, characterized in that the noble metal is copper, silver or gold.
3. The process as claimed in one of the preceding claims, characterized in that the base material is a solid body made of noble metal or an alloy comprising noble metal, a noble metal wire, noble metal wool, knitted noble metal fabric or woven noble metal fabric, a support coated with noble metal or a mixed woven fabric or mixed knitted fabric made of noble metal, in particular together with synthetic and/or carbon fibers, or a noble metal powder, a shaped body comprising noble metal powder, or a coating comprising noble metal powder.
4. The process as claimed in one of the preceding claims, characterized in that the acidic solution has a pH less than 1 and/or comprises water and/or the acidic solution comprises oxidizing inorganic or organic acids and/or mixtures of non-oxidizing acids with water-soluble oxidizing agents.
5. The process as claimed in one of the preceding claims, characterized in that the acidic solution comprises acids which contain nitrogen in oxidation state +5, sulfur in oxidation state +VI, the halides chlorine, bromine and iodine in oxidation state +5 or +7, boron in oxidation state +3, manganese in oxidation state +7 and/or oxygen

in oxidation state -1 or -2.

6. The process as claimed in one of the preceding claims, characterized in that the salt solution
5 comprises hydroxide, carbonate, chloride, bromide, permanganate, chlorate, perchlorate, percarbonate, persulfate, iodate, periodate, perborate, oxalate, bromate and/or perbromate ions and/or anions of pharmacologically active noble metal compounds.
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7. The process as claimed in one of the preceding claims, characterized in that the aqueous salt solution is weakly acidic ($\text{pH} > 4$) to alkaline (pH approximately 11), particularly preferably neutral
15 or alkaline, and/or the aqueous salt solution and/or the acidic solution is 0.1% by weight to saturated or concentrated, respectively, and/or the aqueous solution is free from ammonium compounds or sulfide ions.
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8. The process as claimed in one of the preceding claims, characterized in that the base material, after the oxidation and before the treatment in the salt solution, is quenched with water, in
25 particular tap water.
9. The process as claimed in one of the preceding claims, characterized in that the oxidation of the noble metal surface in the acidic solution and/or
30 the quenching with water and/or the treatment in the salt solution is performed in a temperature range between 10°C and 130°C , preferably at below 80°C , and particularly preferably at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
- 35 10. A system for sterilizing drinking water and industrial water, characterized in that it comprises a base material as claimed in claim 3, the surface of the noble metal is at least in part oxidized and the oxidized noble metal is present

on the surface as slightly soluble noble metal salt or as a mixture of noble metal salts of different solubility, and during the sterilization, noble metal ions released from the surface are replenished from the noble metal of the base material, the noble metal being preferably silver.

11. The system as claimed in claim 10, characterized in that the slightly soluble noble metal salts or the mixture of noble metal salts comprises noble metal oxides, hydroxides, carbonates, chlorides, bromides, permanganates, chlorates, perchlorates, percarbonates, persulfates, iodates, periodates, perborates, oxalates, bromates, perbromates and/or pharmacologically active noble metal compounds.

12. The system as claimed in one of claims 10 to 11, characterized in that the surface of the noble metal comprises crystalline and amorphous noble metal salts.

13. The system as claimed in claim 12, characterized in that the crystalline and amorphous noble metal salts are in direct contact with one another and in direct contact with the bare silver surface, so that, overall, the following regions of differing redox activity and solubility form: i) pure silver surface accessible via pores of the amorphous layer, ii) amorphous noble metal salt layer, iii) crystalline noble metal salt layer, iv) contact zone silver - amorphous noble metal salt layer, v) contact zone silver - crystalline noble metal salt layer, (vi) contact zone amorphous noble metal salt layer - crystalline noble metal salt layer, (vii) contact zone silver - amorphous noble metal salt layer - crystalline noble metal salt layer.

14. The system as claimed in one of claims 10 to 13,

characterized in that it additionally comprises functional threads such as activated carbon or sensory threads.

- 5 15. The system as claimed in one of claims 10 to 14,
characterized in that the base material is a noble
metal powder and the treated noble metal powder is
used for coating surfaces, as such or in a mixture
with metallic and/or nonmetallic powders
10 compressed in antimicrobial shaped bodies, or in
known processes of powder technology.
16. The use of a system for sterilization as claimed
in one of claims 10 to 15 in medical technology,
15 for preserving water-based emulsions, suspensions
and dispersions, or for the sector of personal,
domestic and food hygiene, in environmental
technology and/or as material protection.